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C-MIG 315

COMPACT MIG WELDING MACHINE

OPERATION INSTRUCTIONS

CE

Version 2014-1

Thank you for selecting the R-Tech C-MIG 315 Compact Mig Welder. We want you to take pride in operating our C-MIG 315 as much pride as we have taken in making this product for you.

PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, title passes to the purchaser upon receipt from the courier. Consequently all claims for material damaged in shipment must be made by purchaser against the transportation company used.

Please record your equipment identification below for future reference. This information can be found on data plate at rear of machine.

Product C-MIG315

Serial No. _____

Date of Purchase _____

Where Purchased _____

Whenever you request replacement parts or information on this equipment please always supply information you have recorded above

This product is covered by 2 years collect and return UK warranty, R-Tech will cover cost of collection, repair and return of item to UK mainland (other areas are RTB). External items, torch, earth lead etc are covered by 3 months warranty. Any faults/damage found caused by customer will be charged pro-rata.

Please read this operator manual completely before attempting to use this equipment.
Pay particular attention to the safety instructions we have provided you for your protection

The level of seriousness to be applied to each section is explained below

WARNING

This statement appears where the information must be followed exactly to avoid serious personal injury.

CAUTION

This statement appears where the information must be following to avoid a minor personal injury or damage to this equipment.

Installation

Technical Specifications

Model No.	R-Tech C-MIG 315	
Input		415V 3 ~ AC 50/60Hz
MIG Operation	Rated Input Power	6.2 KVA
	Rated Input Current	18 AMPS
	Rated Output Current	315 AMPS
	Duty Cycle @ 315AMPS	40% @ 40°C
	Duty Cycle @ 200AMPS	100% @ 40°C
	Output current Range	40-315 AMPS
	No Load Voltage	38V MAX
	Voltage Adjustment Range	16V – 33V +/- 3V
	Suitable Wire Diameter	0.8mm 1.0mm 1.2mm
Gross Weight		82 KG
Insulation		Class F

Safety Precautions

Read entire section before starting installation

WARNING!

Electric Shock can kill – Only qualified personnel should perform this installation. Turn off input power at the fuse box before working on this equipment. Do not touch electrically live parts. Always connect the machine to an earthed mains supply as per national recommended standards.

Select suitable location

Place the welder where clean cooling air can freely circulate in and out of the front & rear louver vents. Dirt, dust or any foreign material that can be drawn through vents into welder must be kept to a minimum. Failure to observe these precautions can result in excessive operating temperatures which can lead to plant failure.

Grinding

Do not direct grinding particles towards the welder. An abundance of conductive material can cause plant failure.

Stacking

This machine cannot be stacked.

Transport – Unloading

Never underestimate the weight of equipment, never move or leave suspended in the air above people. Use recommended lifting equipment at all times.

WARNING!
Falling Equipment can cause injury. Never lift welder with gas bottle attached. Never lift above personnel.

Tilting

Machine must be placed on a secure level surface or on a recommended undercarriage/trolley. This machine may topple over if this procedure is not followed.

Environmental Rating

The welding power source carries the IP21S rating. It may be used in normal industrial and commercial environments. Avoid using in areas where water / rain is around.

Read and follow the 'Electric Shock Warnings' in the safety section if welding must be performed under electrically hazardous conditions such as welding in wet areas or water on the work piece.

Machine grounding and High Frequency Interference Protection

This welder must be grounded to earth. See national electrical codes fro proper grounding methods.

The high frequency generator being similar to a radio transmitter may cause interference to radio, TV and other electronic equipment. These problems may be the result of radiated interference. Proper grounding methods can reduce or eliminate this.

Radiated interference can develop in the following ways

1. Direct interference from welder power source
2. Direct interference from the welding leads
3. Direct interference radiated from feedback into power lines
4. Interference from re-radiation by un-grounded metallic objects.

Keeping these contributing factors in mind, installing equipment as per following instructions should minimize problems.

1. Keep the welder input power lines as short as possible and enclose as much of them as possible in metal conduit or equivalent shielding. There should be a good electrical contact between this conduit and ground (Earth).
2. Keep the work and electrode leads as short as possible. Tape the leads together where practical.
3. Be sure the torch and earth leads rubber coverings are free from cuts and cracks that allow welding power leakage

4. Keep earth lead connection to work in good condition – Clean area on workbench where earth clamp is situated on a regular basis.

Input Connections

Make sure the voltage, phase and frequency of input power is as specified on machine rating plate located at rear of machine.

Have a qualified electrician provide suitable input power as per national electrical codes. Make sure machine is earthed / grounded.

Make sure fuse or circuit breaker is correct rating for machine. Using fuses or circuit breakers smaller than recommended will result in 'nuisance' shut off from welder inrush currents even if welding at low amperages.

On multiple voltage input welders, be sure the machine is connected as per the instructions for the voltage being supplied to welder – Failure to follow these instructions can cause immediate failure within the welder and void machines warranty.

WARNING!

ELECTRIC SHOCK CAN KILL

Turn the input power OFF at the mains switch & fuse box before working on this equipment.

Have a qualified electrician install & service this equipment.

Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment.

Do not touch electrically live parts

The C-MIG 315 Mig Welder requires a 415V 50/60Hz 3-Phase supply. It requires an 18A supply. It comes with a 3 metre mains cable attached.

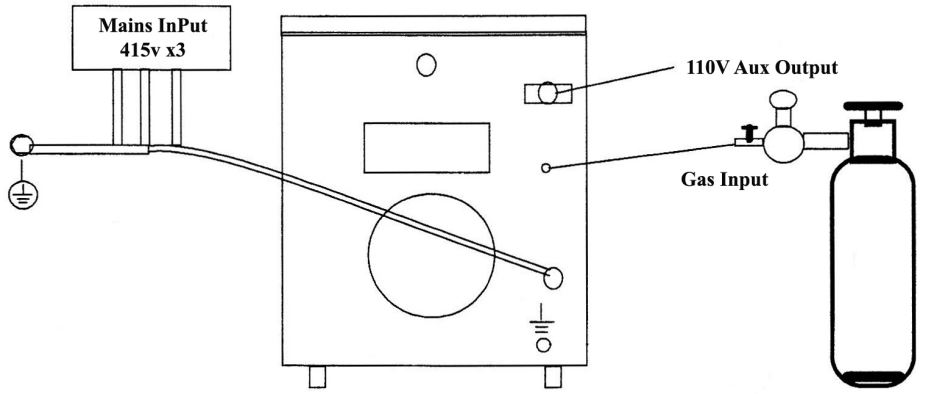
Connect wires according to national coding.

Brown wire – Live
Blue wire – Live
Black wire - Live
Green/Yellow Wire – Earth (Ground)

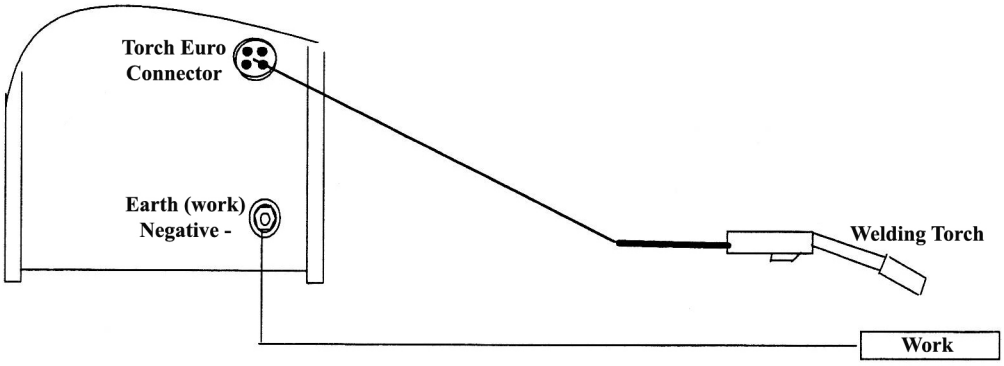
Connections for C-Mig 315

Setup machine as per two diagrams below:

Rear machine connections



Front machine connections



Connect Euro type Mig torch to euro torch connector

To avoid shock keep the Mig torch in good condition and replace if any of the insulation is damaged.

Connect the earth lead (negative -) to work/bench.

Connect the gas input hose to gas regulator, Set gas flow/pressure to 10-14 LPM, in drafty or open areas a higher flow may be required to stop porosity of weld.

Make sure gas bottle is secured machine securely to avoid injury.

Operation

SAFETY PRECAUTIONS

WARNING!

ELECTRIC SHOCK CAN KILL

Do not touch electrically live parts or electrode with skin or wet clothing.
Insulate yourself from work and ground
Always wear dry insulating gloves

WARNING!

FUMES AND GASES can be dangerous

Keep your head out of fumes & gases produced from welding.
Use ventilation or exhaust to remove fumes & gases from breathing zone and general area.

WARNING!

WELDING SPARKS can cause fire or explosion

Keep flammable material away from work area.
Do not weld on containers that have held combustibles

WARNING!

ARC RAYS can burn

Wear eye, ear and body protection – Make sure work area is protected by proper shielding to avoid injury to passers by.

Product Description

The R-Tech MIG is a member of our field acclaimed family of welding products. Premium features include:-

1. 40% Duty cycle at 315Amps @ 40^{o}C
2. Heavy Duty 4-Roll geared wire feed unit for long working life and consistent wire feeding.
3. 21 settings of welding voltage to allow fine tuning of weld characteristics

4. Adjustable burnback control
5. Spot Welding & stitch welding facilities
6. Digital Amp & Volts meters
7. Euro type torch fittings for easy torch fitment/replacement

Recommended Processes

The R-Tech C-MIG315 is recommended for the MIG welding processes within its output capacity of 315 Amps DC

Equipment Limitations

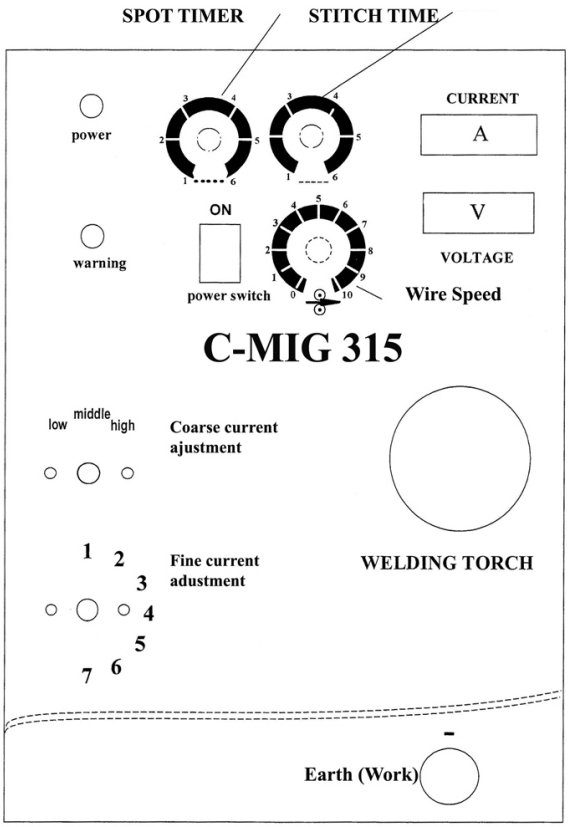
The R-Tech C-MIG 315 is protected from overloads beyond the output ratings and duty cycle as per machine specifications with thermostat protection of the output coils and rectifiers.

Welding Capability – Duty Cycle

The R-Tech C-MIG 315 is rated at 315 Amps at 40% duty cycle on a ten minute basis. If the duty cycle is exceeded a thermal protector will shut machine off until the machine cools.

Controls and Settings

Front Panel



Set required voltage for welding material – Coarse voltage is set via 3 position switch either low, medium or high range – Fine adjust is set via 7 position switch.

Adjust wire feed speed to suit voltage/wire diameter chosen.

Current LED shows actual welding voltage when welding

Voltage LED shows actual welding voltage when welding

Spot Timer – Sets how long spot weld will be

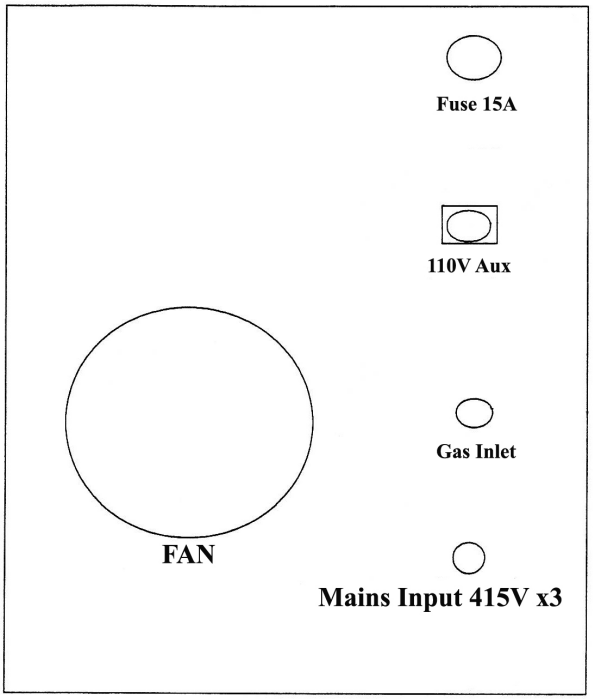
Stitch Time – Sets interval of stitch weld time

Power switch – Turns machine on/off

Power light – lights when machine turned on

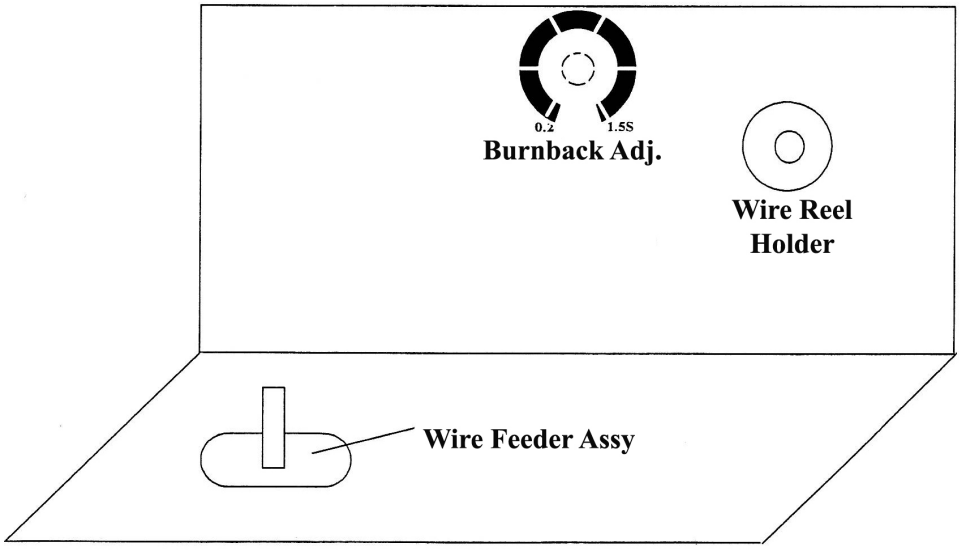
Warning Light – lights when fault occurs (Overworking of machine – overheating)

Rear Panel



15 Amp Fuse – Protection fuse for 110V auxiliary
110V Aux - 110V Auxiliary output for water cooling system etc.

Side panel



Burnback adjustment – This sets amount of time welding power stays on after torch button released and wire feed has stopped. If too little Burnback is set, wire may stick to work after trigger released, if too much Burnback is set wire will Burnback into welding tip.

Wire reel holder – remove retainer screw cap and fit wire reel and refit securing screw cap. The reel holder features an internal adjustable breaking system so that reel of wire stops quickly when torch trigger released, other wise wire reel would continue for a few seconds causing wire to come of sides of reel and cause tangle (birds nest)

Wire feed assy – make sure rollers are correct size for wire diameter selected, to change rollers release retaining knurled head screw fit rollers onto shafts making sure the right size groove is in line with wire and refit retaining screws. Do not over tighten wire feed pressure rollers as this can cause premature motor and roller failure. TIP: Correct way to adjust tensioners is to slacken off pressure so that wire does not feed, slowly adjust pressure until wire feeds smoothly, you should be able to stop wire feeding by holding wire and it should slip on rollers. If you have too little pressure wire will slip when welding causing unwanted Burnback into tips, if you have too much pressure wire can snag in rollers when wire hits work and cause wire tangle by rollers.

Welding operation

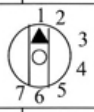
Once you have set machine up as per above instructions press the torch trigger to start welding, gas will flow from torch and main welding power will start and wire feed will start and once wire has touched workpiece welding will start, to stop welding release torch trigger.

Adjust wire feed speed to give desired weld characteristics –

Less wire = Dip transfer welding
More wire = Spray transfer welding

TIP: Inside wire feed lid is chart with approximate recommended welding power settings required for various sizes of material. Chart also shown below

C-MIG315

No.	MATERIAL	GAS	ϕ (mm)	MATERIAL THICKNESS (mm) 1	1.2	1.5	2	2.5	3	5	8	10	15	20
						SETTINGS								
1	Fe	80%Ar 20%CO_2	0.8	1/1	1/3	1/5	1/6	2/2	2/6	3/3	3/5			
2	Fe	80%Ar 20%CO_2	1.0		1/1	1/4	1/6	2/2	2/5	3/2	3/5			
3	Fe	80%Ar 20%CO_2	1.2			1/1	1/3	1/5	1/6	2/1	3/2	3/7		
4	Fe	$C0_2$	0.8	1/2	1/5	1/6	2/2	2/5	3/1	3/5	3/7			
5	Fe	CO_2	1.0		1/4	1/5	2/1	2/2	2/5	3/1	3/5			
6	Fe	CO_2	1.2			1/3	1/6	2/2	2/5	3/2	3/6			
7	CrNi	98%Ar 2%O_2	0.8		1/2	1/4	1/6	2/2	2/5	3/1	3/3	3/5		
8	CrNi	98%Ar 2%O_2	1.0			1/2	1/4	1/6	2/2	3/1	3/3	3/5		
9	CrNi	98%Ar 2%O_2	1.2			1/2	1/4	1/6	2/2	2/6	3/2	3/4		
10	Al	Ar	1.0				1/1	1/5	2/2	2/5	3/2	3/4		
11	Al	Ar	1.2				1/1	1/4	1/6	2/6	3/3	3/6		
12	Al	Ar	1.6				1/1	1/5	2/1	2/4	3/4			

Maintenance

Routine and periodic maintenance

WARNING!

ELECTRIC SHOCK CAN KILL

Turn the input power OFF at the mains switch & fuse box before working on this equipment.

Have a qualified electrician install & service this equipment.

Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment.

Do not touch electrically live parts

1. Periodically remove the side/top panels of machine and clean out machine with a low pressure dry air line paying particular attention to PC Boards, Fan blades, HF points
2. Inspect input and output cables & hoses for fraying, cuts & bare spots
3. Keep tig torch and cables in good condition
4. Clean air vents to ensure proper air flow and cooling
5. The fan motor has sealed bearings which requires no maintenance

Troubleshooting

Service & repair should only be performed by R-Tech welding trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your warranty. For your safety and to avoid electric shock, please observe all safety notes and precautions detailed throughout this manual

The troubleshooting guide is provided to help you locate possible machine malfunctions.

Simply follow the 3 step procedure below

Step 1 Locate problem (symptom)

Look under the column labeled ‘Problem (symptoms)’. This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting

Step 2 Possible Cause

The second column labeled ‘possible cause’ lists the obvious external possibilities that may contribute to the machine symptom

Step 3 Recommended course of action

This column provides a course of action for the possible cause, generally it states to contact R-Tech welding for repair of machine.

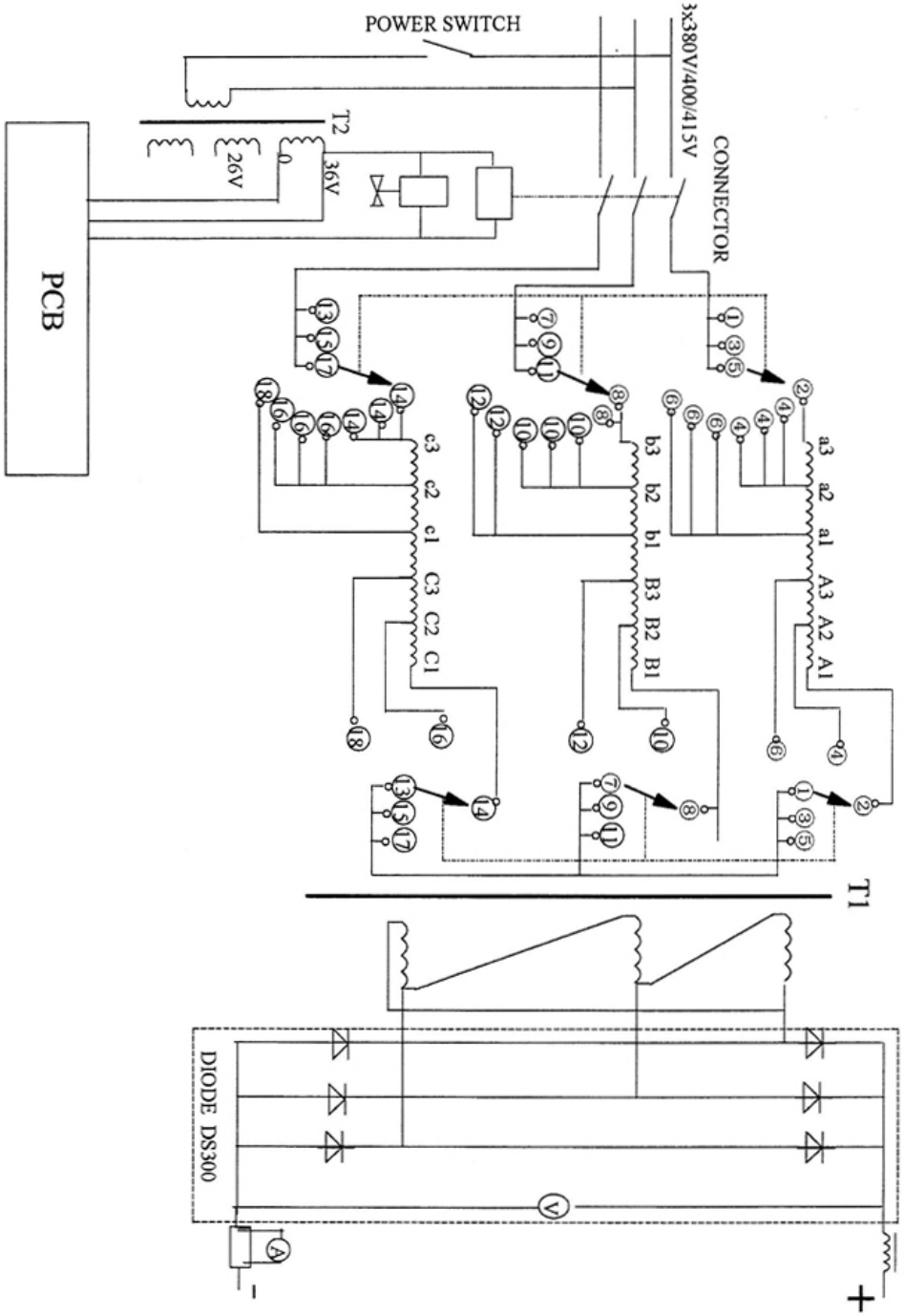
Output Problems

Problems	**Symptoms**	**Rec. Course of action**
Machine is dead – No Output – No fan	1 Make sure the input switch is in the ‘ON ‘ position 2 Check the input voltage at the machine. Input voltage must match the rating plate. Refer to installation in this manual. 3 Blown or missing fuses on mains input.	If all recommended areas of fault have been checked and problem persists, Contact R-Tech Welding for repair.
Fan runs normally at power up – No output from machine	Check for proper input voltages as per rating plate.	As Above
Fan runs –No output form machine and the warning light on control panel is lit.	Welding application may have exceeded recommended duty cycle. Allow the unit to run until fans cools the welder and the light goes out.	As Above
Fan runs – Machine does not respond to torch switch.	The torch switch is faulty. Check for continuity on torch trigger wires or replace torch. If torch is working then suspect PCB failure or broken wiring.	As Above
Problems	**Symptoms**	**Rec. Course of action**
Machine regularly overheats – warning light on front panel lit. Fan runs but machine has no output	1 Welding application may exceed recommended duty cycle – Reduce the duty cycle of job. 2 Dirt and dust may have clogged the cooling vents. Blow out machine with dry, clean low pressure air. 3 Air vents may be blocked due to inadequate clearance around machine	If all recommended areas of fault have been checked and problem persists, Contact R-Tech Welding for repair.

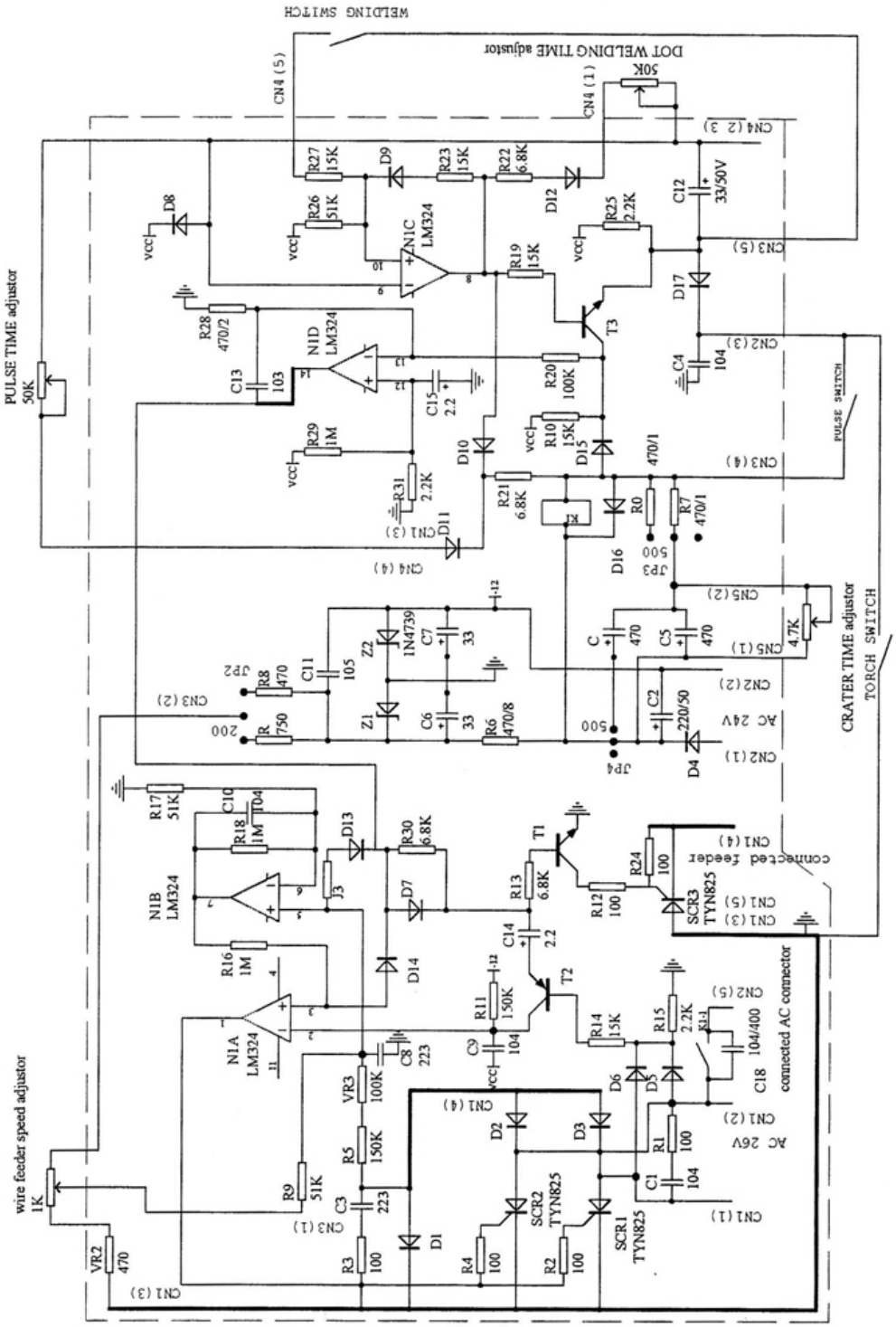
Mig Weld Problems

No gas flow when torch switch activated. Machine has output and fan runs. A click can be heard indicating gas solenoid is operating	1 Gas supply is empty or turned off 2 Flow regulator may be set too low 3 Gas hose may be pinched 4 Gas pipe blocked. Blow out with low pressure air line	If all recommended areas of fault have been checked and problem persists, Contact R-Tech Welding for repair.
Poor weld penetration	Check condition of earth lead & clamp and make sure it is fitted to clean area on bench/workpiece.	If all recommended areas of fault have been checked and problem persists, Contact R-Tech Welding for repair.
Porosity in weld	Check gas flow from torch tip, if you cant get enough gas flow, adjust gas regulator flow if bottle has gas check torch for gas restriction – try replacing torch	If all recommended areas of fault have been checked and problem persists, Contact R-Tech Welding for repair.

Electrical Schematic Diagram



Wiring Diagram



WARNING	● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground.	● Keep flammable materials away.	● Wear eye, ear and body protection.
Spanish **AVISO DE PRECAUCION**	● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aislese del trabajo y de la tierra.	● Mantenga el material combustible fuera del área de trabajo.	● Protéjase los ojos, los oídos y el cuerpo.
French **ATTENTION**	● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. ● Isolez-vous du travail et de la terre.	● Gardez à l'écart de tout matériel inflammable.	● Protégez vos yeux, vos oreilles et votre corps.
German **WARNUNG**	● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden!	● Entfernen Sie brennbarres Material!	● Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese **ATENÇÃO**	● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra.	● Mantenha inflamáveis bem guardados.	● Use proteção para a vista, ouvido e corpo.
Japanese **注意事項**	● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁されている様にして下さい。	● 燃えやすいものの側での溶接作業は絶対にしてはなりません。	● 目、耳及び身体に保護具をして下さい。
Chinese **警 告**	● 皮肤或濕衣物切勿接觸帶電部件及銲條。 ● 使你自己與地面和工件絶緣。	● 把一切易燃物品移離工作場所。	● 保戴眼、耳及身體勞動保護用具。
Korean **위 험**	● 전도체나 용접봉을 젖은 헝겁 또는 피부로 절대 접촉치 마십시요. ● 모재와 접지를 접촉치 마십시요.	● 인화성 물질을 접근 시키지 마시요.	● 눈, 귀와 몸에 보호장구를 착용하십시요.
Arabic **تحذير**	● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الالكترود بجلد الجسم أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل.	● ضع المواد القابلة للاشتعال في مكان بعيد.	● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone.	● Turn power off before servicing.	● Do not operate with panel open or guards off.	WARNING
● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.	● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.	● No operar con panel abierto o guardas quitadas.	Spanish AVISO DE PRECAUCION
● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.	● Débranchez le courant avant l'entretien.	● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.	French ATTENTION
● Vermeiden Sie das Einatmen von Schweibrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!	● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)	● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!	German WARNUNG
● Mantenha seu rosto da fumaça. ● Use ventilação e exhaustão para remover fumo da zona respiratória.	● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas.	● Mantenha-se afastado das partes moventes. ● Não opere com os paineis abertos ou guardas removidas.	Portuguese ATENÇÃO
● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。	● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。	● パネルやカバーを取り外したままで機械操作をしないで下さい。	Japanese 注意事項
● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。	● 維修前切斷電源。	● 儀表板打開或沒有安全罩時不準作業。	Chinese 警 告
● 얼굴로부터 용접가스를 멀리하십시요. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시요.	● 보수전에 전원을 차단하십시요.	● 판넬이 열린 상태로 작동치 마십시요.	Korean 위 험
● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.	● اقطع التيار الكهرباني قبل القيام بأية صيانة.	● لا تشغل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.	Arabic تحذير

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的説明以及應該使用的銀捍材料，並請遵守貴方的有関勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.